Dear Editor:

Please find the response to both reviewers. The reviewers' comments are in black, the corresponding response is in red. We further indicate the lines in the annotated version where text has been added, and such text is included in this response in italics.

Response to comments by Kasper van Wijk.

- Figure 3: it is not clear (and I am not sure) that the blue line is the local number of COVID cases. Maybe I missed it in the text, but it should go in the caption, legend, and be quantified on a right y-axis. What does this show? A lack of correlation between seismic noise and cases (is that the blue curve? caption, axis, annotation missing)

Thanks for the comment, we missed the description in the caption. Figure 3 is now Figure 4. The figure has been modified to include the number of confirmed cases on the right axis. The figure now loos as follows with the corresponding caption:

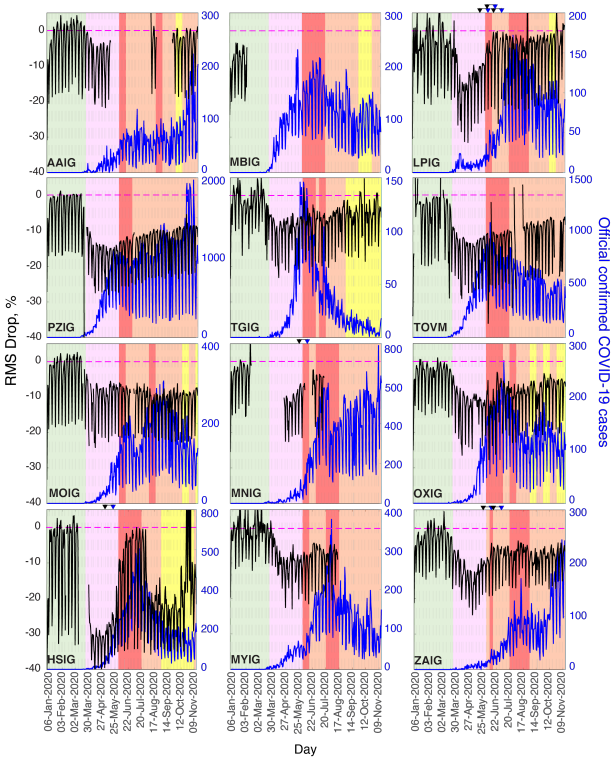


Figure 4: RMS noise for frequencies 1 to 5 Hz (left axis, black lines) at stations located in capital cities. The right axis (blue line) indicates the number of official confirmed COVID-19 cases. Triangles on top of selected stations indicate when the RMS noise starts an increase tendency (black triangle) and when the COVID-19 cases start a fast grow (blue triangle). The lag between these triangles is two weeks.

The number of confirmed cases are by state. The stations are located at the state capital where most of the cases have been reported. Correlation of seismic noise and cases is only evident in four stations. They have been marked in Figure 4. Also, the following text has been added in lines 161-162:

In contrast with the analysis by Ojeda and Ruiz (2021) for Santiago, Chile, only few studied Mexican cities show a strong correlation of seismic noise variations and epidemiological factors (Figure 4).

Furthermore, text in lines 276-279 now reads as follows:

Comparing the daily COVID-19 confirmed cases with the daily RMS noise at frequencies from 1 to 5 Hz (Figure 4), a rapid increase in the seismic noise (i.e., a quick return to city activities) have coincided, with a two-week lag, with a rapid increase in daily confirmed cases; for example in La Paz (LPIG), Monterrey (MNIG), Hermosillo (HSIG), and Zacatecas (ZAIG).

Comment in page 8, line 163. What time of day was the event?

The event was at 20:52 local time. Usually Monday night, at that time traffic in the city is still heavy. The streets were quiet that Monday due to lockdown. The event on 2017 was after midnight, when the city is quieter but not as quiet as during lockdown in April. The following table has been included in the manuscript.

Table 1: Earthquakes at the Guerrero coast from 2016-2020, at similar distances from Mexico City and similar magnitudes.

Date	Local Time	Day of the week	Magnitude	Number of surveys received
6 April 2020	20:52	Monday	5.0	114
4 June 2019	14:12	Tuesday	4.9	29
13 February 2017	01:29	Monday	5.0	84
2 December 2016	07:57	Friday	4.9	49

- Figure 4: this is potentially very interesting. Can the authors apply some statistical analysis for a seeming increase in detections of weak events? What alternative explanations to seismic quieting could give rise to such an increase? This may require some hard-core stats to show there is an uptake in reports of small events?

Figure 4 (now Figure 5) is based in the national catalogue. The low magnitudes are reported in regions with a denser station distribution or where events have happened close to a station. Those

are the cases for Mexico City and for the seismicity reported in Zacatecas, respectively. The observed low magnitudes during confinement are for the latter case, for which there are not enough events to conduct hard-core stats or a completeness magnitude estimation analysis as suggested by the other reviewer. We included the following text in lines 218-220:

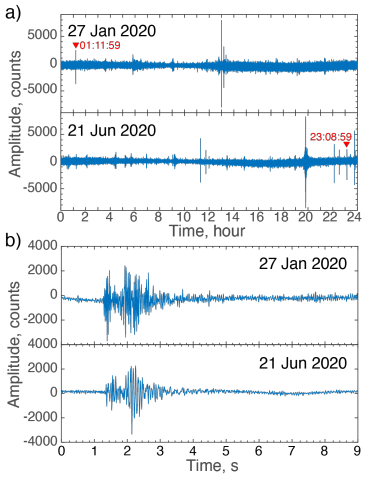
Pérez-Campos et al. (2019) present a spatial distribution of the minimum magnitude reported in the SSN catalogue and able to detected by the 2019 network configuration. From this analysis, it is evident that the detection level, and therefore completeness magnitude, is heterogenous at the national level.

- Figure 5: The top panel is very convincing that the lockdown cleans up urban seismograms. The bottom panel may be convincing too, but it would be good to know at what time of the day (local time) these two events were. If they were at a similar time, this is more evidence of lockdown quiescence. top panel is convincing. Bottom panel depends: if the 21 June event was at night and 27 January event during the day, this would explain the difference.

The time of the events shown in the bottom panel are 01:11:59 for the 27 January (Sunday 19:11:59, local time) event and 23:08:59 for the 21 June (Sunday 18:08:59, local time) event. The times are very similar. After re-reviewing the events, the magnitude for the first one was 1.4 while it was 1.2 for the second one. We have modified the text in lines 229-232 as follows:

Eighty-seven of these events can be visually identified but were not previously reported since in the daily analysis they were discarded due the large noise level. Figure 6 shows the signals for two days, the first one on 27 January (Sunday 19:11:59, local time), M 1.4, and the second one on 21 June (Sunday, 18:08:59 local time), M 1.2. The signal is clearly less contaminated with high frequencies for the record in June 2020.

Figure 5 is now Figure 6 and now it looks as follows (after taking into account the comment by the other reviewer):



- As this is now part of a special issue where other papers with similar "local" studies have been done, I'd like to see a discussion on how this example relates to other local studies in this special issue.

The following lines have been added:

Lines 150-152: *The reduction in noise level was not as strong as in other countries (e.g., Cannata et al., 2021); the maximum reduction was observed at station HSIG, located in Hermosillo, capital of Sonora, a state in the northwest of Mexico.*

Lines 156-162: *In some countries, seismic noise levels have been strongly correlated with the lockdown phases (e.g., Díaz et al., 2021; Ojeda and Ruiz, 2021); however, in Mexico the lockdown is not imposed, and a weak correlation is observed between the noise variation and the lockdown phases. This suggests that at some cities people did not fully followed the recommendations of lockdown.*

In contrast with the analysis by Ojeda and Ruiz (2021) for Santiago, Chile, only few studied Mexican cities show a strong correlation of seismic noise variations and epidemiological factors (Figure 4).

Lines 226-227: *Similar to van Wijk et al. (2021), due to the reduced noise levels, we were able to identify a template.*

Lines: 268-270: *As suggested by Díaz et al. (2021) for Barcelona, Spain, Cannata et al. (2021) for Sicily, Italy, and Ojeda and Ruiz (2021) for Santiago, Chile, seismic noise can be used to monitor urban mobility. However, the seismic noise levels for Mexican cities seem to be weakly modulated by the state traffic-light system.*

If the authors are willing and able to address the above points, maybe the results can be incorporated to strengthen the conclusions of this interesting field study of lockdown seismology.

Thanks a lot for the comments, they enriched our manuscript and strengthened our conclusions.

Response to comments by Thomas Lecocq.

I reviewed your manuscript with interest. Please excuse me for the delay, finding reviewers was really difficult.

The presentation of the results from the Mexican networks is interesting as it sheds light on the importance to take the difference of cultural/setting of cities, with links to the cities' development, organisation of the infrastructure, road system and shopping/work life.

- Following this, the analysis on Figure 1 is particularly interesting, and this figure should be reorganised to make the maps larger, with clearer (bigger) symbols. Panel c) is great, as it suggests that stations installed in locations with less than 10.000 inhabitants show no weekly cycles, i.e. effectively "away" from anthropogenic vibrations. Yes, some stations in that area do show weekly cycles, and a drop. It would be interesting to exemplify those in the results/discussion (maybe number them/label them) and try to explain the reason why they stand out (local roads, schools, industry?).

We have splited Figure 1 in two figures. Now they look as follows:

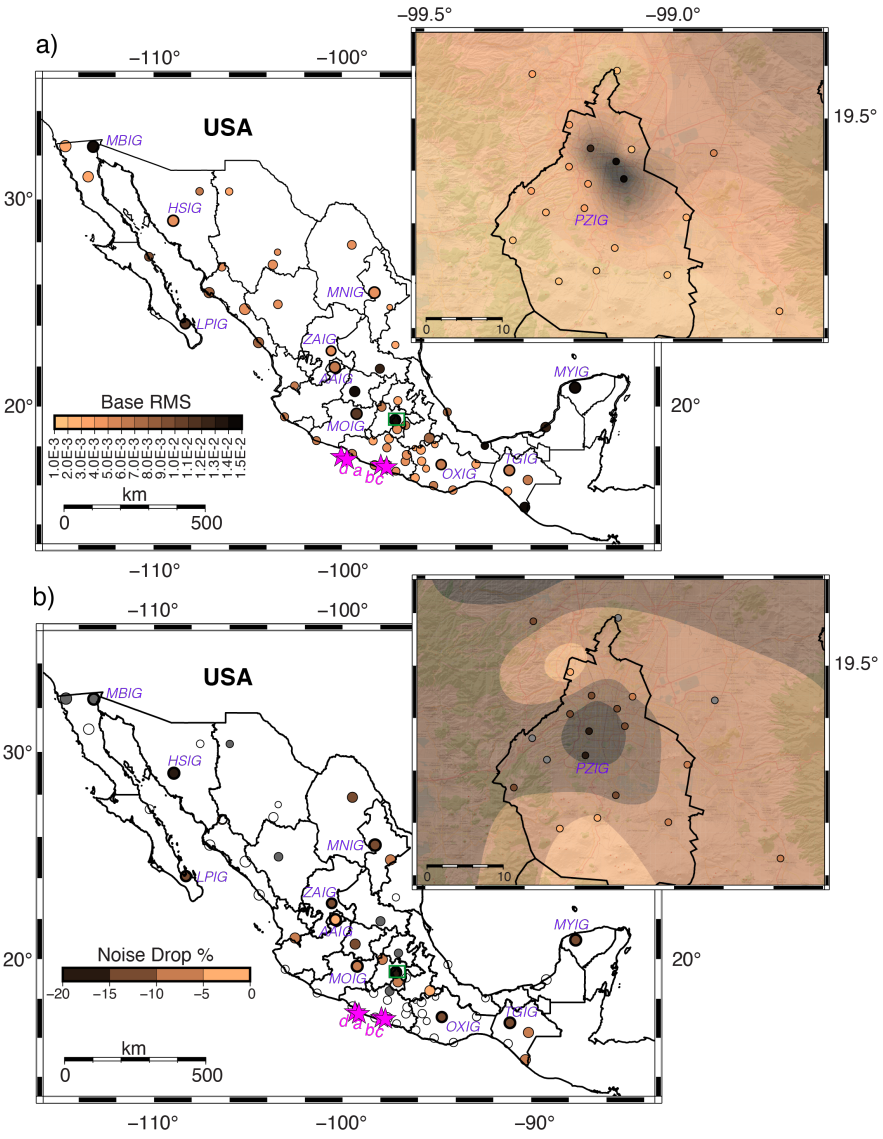


Figure 1: a) Noise RMS level and b) drop at seismic stations in Mexico. The pink stars indicate the location of the (a) 2020, M5.0, (b) 2019, M4.9, (c) 2017, M4.9, and (d) 2016, M5.0 earthquakes. The green box corresponds to the Valley of Mexico, shown in the inset. Symbol size is proportional to the municipality population (CEDRUS, 2019) where the station is located.

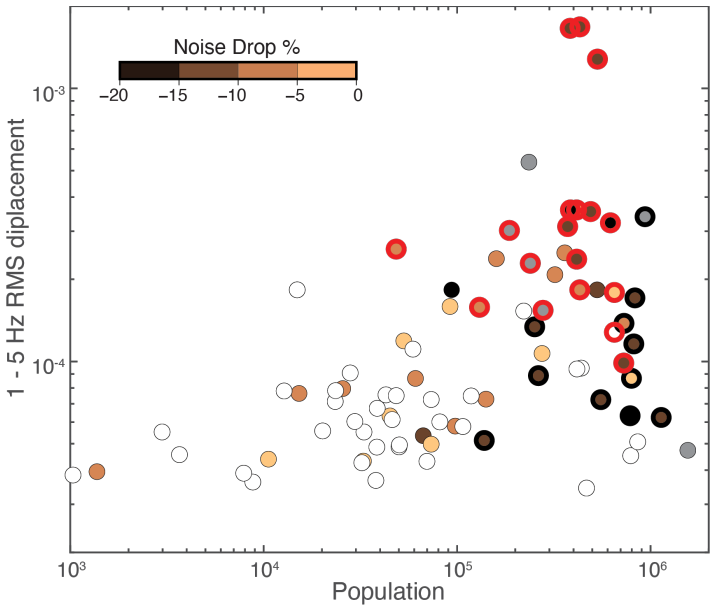


Figure 2. Noise RMS level and drop with respect to population. The outline symbols denote stations located in capital cities; the ones in red are in Mexico City. The white circles correspond to stations where no weekly cycle was observed; the grey ones, to stations where it was not possible to identify a drop in the noise level.

The only station with a clear weakly cycle but with less than 10,000 inhabitants is located at a university campus, therefore, it reflects the school activity. We have added the following text in lines 96-97:

The only station at a municipality with less than 10,000 inhabitants, and a low RMS displacement, that shows an evident weekly cycle is within a university campus.

- Figure 3: the graphs should be made clearer (remove the X for scatter points, e.g.) and the colour described. This figure allows "believing" the noise level is anti correlated with traffic light colour, and this analysis should be complemented with example scatter plots of "RMS drop" vs "cases", coloured by the TL colour. An analysis of the time lag between the two series, or the lag between a TL change & the seismic response would be really interesting in supporting the authors' claims on the signature of TL on seismic data.

We have removed the X for the scatter points.

Correlation is hard given many of the stations have incomplete RMS drop data. However, we indicate with triangles at the top of each panel where a two-week delay can be observed between an RMS increase and the number of cases increase.

Please see the response to the other reviewer regarding the same figure, now Figure 4.

- Figure 4: are there enough events to conduct a completeness magnitude estimation before & during measures were enforced?

Please see the response to the other reviewer regarding the same figure, now Figure 5.

- Figure 5: please highlight in a) the position/timespan of the events presented in b)

The time for the events in b) has been highlighted in a). Please see the response to the other reviewer regarding the same figure, now Figure 6.

- Regarding the "Sentiste un sismo": could the author provide some details on what kind of reports were made by citizens? does it include small/weak motions, mentions of sound, etc?

We have added the following text in lines 203-211:

In the four events, obtained macroseismic intensities vary from II to V in the Mercalli Modified Intensity (MMI) scale, only for the 13 February 2017 earthquake, two values of VI in MMI were reported. The distribution of the macroseismic intensities values shows that during the 06 April 2020 earthquake, user reports were considerably more in central Mexico, located approximately 250 km from the epicenter, compared to other earthquakes that occurred previously to the COVID-19 lockdown. The ground-shaking experienced by citizens was mainly weak (values of II - III in MMI), however, the number of felts reports of intensity values of II and III were, respectively, approximately 2.5 and 2.9 times greater during the lockdown than for previous events. We conclude that the increase in the surveys received in ¿Sintió un Sismo? is the result of the seismic noise reduction mainly in urban centers.

- I agree with the other reviewer that your article should include a discussion of the changes in Mexico in the perspective of some other results published since last summer, including cases in cities, rural areas and increased detectability.

Please see the response to the other reviewer regarding the same comment.

I hope you will address those comments to make this "network"-wide contribution even more interesting for other network operators & countries.

Thanks a lot for your comments, they improved our manuscript.